REMARKS

The application has been reviewed in light of the final Office Action dated July 16, 2003. Claims 1-3 were pending in this application. By this Amendment, Applicants have added dependent claims 4-7. It is respectfully submitted that no new matter has been introduced. Accordingly, claims 1-7 are presented for examination, with claims 1-3 being in independent form, and entry of this Amendment is respectfully requested.

Claim 1 was rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 6,200,024 to Negrelli in view of U.S. Patent No. 6,309,102 to Stenfors. Claims 2 and 3 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 4,501,011 to Hauck et al. in view of U.S. Patent No. 6,041,097 to Roos et al.

Applicants have carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 1-3 are patentable over the cited art, for at least the following reasons.

This application relates to x-ray equipment which uses a digital flat panel detector. Over the years, a variety of standard protocols have been developed for imaging various parts of the body. In recent years, digital x-ray sensor technology have replaced film as a preferred x-ray recording medium. However, the cost of digital flat panel detectors are an obstacle to providing multiple digital flat panel detectors pre-mounted in a system to allow sensors to be available for each of the standard imaging protocols that are typically desired for each system. Applicants devised a system for positioning a digital flat panel x-ray receptor for a variety of diagnostic x-ray protocols.

For example, independent claim 1 is directed to a system, according to one embodiment, for positioning a digital flat panel x-ray receptor for a variety of diagnostic x-ray protocols. The system comprises at least one x-ray source, a digital flat panel x-ray receptor and an upwardly extending, floor-supported column. The x-ray source selectively emits an x-ray beam. The digital flat panel x-ray receptor has an imaging face. The floor-supported column supports the receptor for movement to different positions up and down along an upwardly extending axis, about the same or a different upwardly extending axis, and about a lateral axis transverse to the axis along which the receptor moves up and down. The receptor and the x-ray source are mounted on separate supports for movement independent of each other. The x-ray source and the receptor are juxtaposed for directing the x-ray beam to the imaging face of the receptor for a variety of diagnostic x-ray protocols, including protocols in which the source is above the receptor and protocols for lateral imaging in which the source and receptor are at matching levels.

The cited art does not disclose or suggest the claimed invention of claim 1.

Negrelli, as understood by Applicants, is directed to a robotic support system, as a substitute for a C-arm support, for a radiographic imaging apparatus. The support system includes positioning systems for positioning an x-ray source and an x-ray detector, respectively, relative to an examination region. In the support system of Negrelli, the x-ray source system remains below the patient table, and the x-ray detector remains above the patient table.

As acknowledged in the Office Action, Negrelli does not disclose or suggest means for positioning the digital flat panel x-ray receptor

for a variety of diagnostic x-ray protocols that includes protocols in which the source is above the receptor and protocols for lateral imaging in which the source and receptor are at matching levels.

Stenfors, as understood by Applicants, is directed to a C-arm type x-ray examination positioner. The C-arm apparatus of Stenfors is cited by the Office Action as purportedly supporting the capability of scanning of a patient laterally. In addition, the Office Action alleged that it would have been obvious to combine the teachings of Negrelli and Stenfors.

Applicants maintain that it would not have been obvious to combine the teachings of Negrelli and Stenfors because Negrelli teaches away from the use of C-arm apparatuses (see, column 2, lines 5-22). For example, according to Negrelli, C-arms are large and bulky, and in many instances obstruct access to the patient. For these and other reasons, Negrelli teaches that C-arms are disfavored.

In addition, the Office Action does not identify how to combine the teachings of Negrelli and Stenfors to adapt the robotic support system of Negrelli for lateral scanning. Applicants simply do not find teaching or suggestion in Negrelli and Stenfors to adapt the robotic support system of Negrelli for lateral scanning.

Applicants maintain that absent impermissible hindsight reconstruction of the claimed invention using the claims as roadmap, the claimed invention simply would not have been obvious to one of ordinary skill in the art based on the teachings of Negrelli and Stenfors.

The cited art does not disclose or suggest the claimed invention of claim 1.

Independent claim 2 is directed to a system positioning a digital

flat panel x-ray receptor for a variety of diagnostic x-ray protocols. The system comprises an x-ray source, a digital flat panel x-ray receptor, a first track supporting, for movement along the first track, a first downwardly extending, telescoping column, a second track supporting, for movement along the second track, and a second, downwardly extending, telescoping column. The x-ray source selectively emits an x-ray beam. The digital flat panel x-ray receptor has an imaging face. The first telescoping column supports the x-ray source for movement up and down, about a first up-down axis, and about a first lateral axis transverse to the first up-down axis, to thereby position and orient the x-ray beam for a variety of x-ray imaging protocols. The second telescoping column supports the receptor for movement up and down, about a second up-down axis, and about a second lateral axis transverse to the second up-down axis, to thereby position and orient the imaging face of the receptor to match the position and orientation of the x-ray beam for the variety of x-ray imaging protocols, including protocols in which the source is above the receptor and protocols for lateral imaging in which the source and receptor are at matching levels. The first and second tracks are spaced from each other to allow movement of the first column along the first track that is independent of movement of the second column along the second track.

Independent claim 3 is directed to a system positioning a digital flat panel x-ray receptor for a variety of diagnostic x-ray protocols. The system comprises an x-ray source, a supporting structure for the x-ray source, a digital flat panel x-ray receptor, a track supporting, for movement along the track, and a downwardly extending, telescoping column. The x-ray source selectively emits an x-ray beam and positions the beam at positions and orientations for a variety of x-ray imaging

protocols. The digital flat panel x-ray receptor has an imaging face. The telescoping column supports the receptor for movement up and down, about an up-down axis, and about a lateral axis transverse to the up-down axis, to thereby position and orient the imaging face of the receptor to match the position and orientation of the x-ray beam for the variety of x-ray imaging protocols, including protocols in which the source is above the receptor and protocols for lateral imaging in which the source and receptor are at matching levels. The track is spaced from the supporting structure for the x-ray source to allow movement of the column along the track that is independent of movement of the x-ray source or the support thereof.

Hauck, as understood by Applicants, is directed to an apparatus for coupling independently suspended x-ray source and detector for lateral fluoroscopic studies, such as angiography. The x-ray detector is an analog type electronic image intensifier.

The Office Action acknowledges that Hauck, does not disclose or suggest, however, a system that employs a digital flat panel x-ray receptor.

Roos, as understood by Applicants, is directed to a fluoroscopic diagnostic imaging device which includes a gantry for supporting an x-ray tube and a flat plate x-ray detector. The gantry rotates the x-ray tube and x-ray detector about an examination region. A processor is adapted to reconstruct the data values read out during the rotation of the x-ray tube and the x-ray detector.

Roos does not disclose or suggest, however, how the processor might reconstruct the data values if the x-ray tube and the x-ray detector are moved in another fashion such as for lateral imaging protocols. Therefore, contrary to the Office Action, the claimed

invention cannot be reconstructed (absent impermissible hindsight) simply by substituting the flat plate x-ray detector of Roos for the electronic image intensifier of Hauck.

Accordingly, Applicants maintain that the claimed invention simply would not have been obvious to one of ordinary skill in the art based on the teachings of Hauck and Roos, unless the claims are impermissibly used as a roadmap for reconstructing the claimed invention.

For at least the above-stated reasons, Applicants respectfully submit that independent claims 1-3, and the claims depending therefrom, are patentable over the cited references.

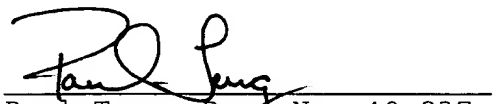
The Office is hereby authorized to charge any additional fees that may be required in connection with this response and to credit any overpayment to our Deposit Account No. 03-3125.

If a petition for an additional extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Reconsideration and allowance of this application are respectfully requested.

Respectfully submitted,



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